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is unconditioned only because the feeling is too crude an instrument to grasp its determinate quantitative and qualitative conditions.

Again, do the categories of the Dialectic, which condition all our conscious experience, hold good for all possible extensions of experience? If they do, then that which is now beyond actual experience is already determinate and conditioned. The fact that our experience is never complete and all-embracing does not warrant us in saying that what is beyond it is, *in se*, unconditioned. If I am correct in interpreting the logic of the author's position, we can legitimately speak of a "Whole" of being which we as finite intelligences may never, indeed can never, completely know. But we have no warrant for declaring it to be unconditioned.

Dr. Laurie's Unconditioned combines at times the doctrines of Pure Being without predicates and the Unknowable. Quite in the manner of Hamilton, Mansel, and Spencer, he insists that to know is, *ipso facto*, to limit or condition, and so to "cancel" an Unconditioned. Why not regard the process of knowledge as the interpretation of an already conditioned? This, as I have suggested, would seem to be the logical result of the author's own doctrine of the objectivity of the categories.

WALTER G. EVERETT.

BROWN UNIVERSITY.

Philosophie der Botanik. Von J. REINKE. Leipzig, J. A. Barth, 1905. — pp. vi, 201.

The title of this work is justified only in so far as the author presents the more general questions discussed in the botany of the present day. This, it must be admitted, he does in a fairly complete manner; yet, in so doing, he includes much that would not ordinarily be comprised under the term 'philosophy,' and at the same time omits much that should be discussed in order to make the title appropriate. In fact, he quite neglects to go into those more important and distinctly philosophical questions to which certain problems that he does discuss really lead him. However, the book is written from a distinctly metaphysical point of view, but metaphysical, chiefly, in the sense in which the term is used by so many empiricists as a word of reproach for the use of imaginary and non-verifiable entities. Such a metaphysical element in the present case is the "Dominant," which our author introduces as a "force" akin to intelligence, but yet not conscious in nature, and which he finds necessary, as he thinks, in order to account for certain phenomena, not only in plants, but also in animals. It is this acceptance of "Dominants," etc., that accord-

ingly places him in that group of writers known as the 'neo-vitalists,' a group whose point of view the reviewer has previously had occasion to oppose, as he does also in the present case. These points will be made clearer by taking up the book somewhat in detail.

The author presents that which he regards as his philosophical and critical point of view in the first two chapters. Thus, in Chapter I, entitled "Aufgaben," after a few trite statements about a philosophy of botany having a critical purpose and being a science of presuppositions, etc., he reviews traditional epistemology somewhat, and accepts the realistic position. For this partiality an interesting, though perhaps not convincing, reason is given, namely, that were not the knowing-faculties of man capable of giving the truth, then could the organism not continue to exist; since the knowing-faculty is an adaptation, it must be truth-giving.

In Chapter II, on "Facts and Hypotheses," it must be admitted that some good points are made. Science is not constituted by an accumulation of facts alone, but, at the same time that these are necessary and must be of such a nature as to allow of generalization, there must also be another, a "speculative" element, the hypothesis, to bind them together, etc. In fact, directing his argument against a well-known school, our author states that a science free from hypotheses, either as working-means or as means of completion, is an impossibility, at least at the present time.

In Chapter III, on "Causality and Finality," the purpose is to show by certain general reasons, which are expanded in subsequent chapters, that physics and chemistry do not suffice for the explanation of the organism.

Thus, in Chapter IV, entitled "Die Kräfte," he develops this point of view. The concept "force" receives attention here; it is defined as "whatever is effective in nature," as "whatever brings about changes." Undoubtedly, our author says, the term designates a causal relation, and, since in any case the essential nature of cause is unknown, it is made to include psychical as well as physical forces.

However, different kinds of "forces" are distinguished as present in the organism, those, namely, which do mechanical work, the energies, and those which do not, the "nicht-energetische Kräfte." These last concern the organism as a whole, and are divided into "System-forces," "Dominants," and "psychical forces." The first depend on the structure of the organism, on "system-conditions," and fall, together with the energies, under "mechanical forces"; but "system-conditions" are only qualitative, they are not quantitatively measurable, they are not energies.

However, it is with the second class, the "Dominants," that our author is most concerned; indeed, it is this concept especially that leads him into a series of difficulties and inconsistencies. The "Dominant" is very similar to, if not identical with, the "Entelechy" of Driesch; it is defined (p. 41) as the intelligent self-building force of the organism, without analogy in the inorganic world, since here, it is asserted, things cannot build themselves.

The third group, the "psychical forces," include not only those which already are, but also those which can be, in consciousness.

It is in virtue of the presence of either of the first two or of all three of these "forces" that opportunity is found for causation of a "final" nature, and, our author insists, it is as much a scientific duty to discover relations of "finality" as it is any others. However, of the three, the "Dominants" are made to play the most important rôle biologically. The author's proof for them is in substance as follows: — The organism is a system whose properties are different from those of the inorganic world, and which the energies alone cannot have "brought forth"; but they must have a sufficient cause, and this rôle can be filled only by some intelligently working "force," here called the "Dominant." The weakness of this argument is evident. It consists in the assumption that energies in coexistence in a system act only additively, an assumption which is contrary to the well-known and frequently found non-additive results. *With this kind of action* granted, — "creative synthesis" I have called it elsewhere, — then all the properties of the organism are completely determined by and originate from the energies, and no place is left, scientifically, for "forces" like "Dominants" or for relations of "finality" in the usual sense of that term.

The remaining chapters are more technical. Thus, in Chapter V the cell, its parts, functions, etc., are discussed. Preference is expressed for a dynamical theory of life as opposed to a morphological one of pangenesis, etc.; but, in contrast to this display of good judgment, inheritance is made to depend on special forces, namely on the "Dominants," which are now stated to exist in the chromosomes.

Chapter VI is rather methodological; the question is raised: What characters distinguish the organism from other things? The answer given thereto is that life is not simply a chemical problem; it is this, but also more, for it is characterized by a unifying bond, a purposefulness. Our author here takes the vitalistic position. But the reader would be disappointed if he should therefore expect to find some kind of consciousness accepted as present in plants and lower animals, for this is explicitly denied, as are indeed all panpsychist theories. Even the "Dominants" are not psychical, though they are said to be intelligent

(p. 84); but this statement is followed by another which denotes them as an α in plant life, and admits their possible reduction to other "forces."

Chapter VII deals with the "Form of Plants." Morphology shows a correlation of parts, etc., which is the ground of "finality." The complete scheme is, then, that the "Betriebsenergieen" (physical and chemical) work in combination with the "System-conditions" to preserve life, etc., but are guided by the "Dominants." These, therefore, control the "Organisation-höhe," and it is with this that "worth-judgments" and classification are concerned.

Chapter VIII is on "Adaptation." This also is made to depend on the "Dominants"; it is another case of "finality" in relation either to other plants, or to animals, or to inorganic environment. All adaptations demand an adaptation-ability, which is itself an adaptation, the most fundamental of all. Mutations are accounted for by the scheme, "System-conditions" and "Dominants"; they are held to be conditioned from within and not from without.

Chapters IX, X, XI, and XII all concern the Theory of Descent. That the living comes only from the living is regarded as the fundamental principle of biology, but this law of continuity of descent must be supplemented by the law of change. Every theory of descent must rely on palæontology, for living organisms give only very limited evidence. Touching on mutations, our author thinks that many of these have no special use, and that in any case their infrequent appearance decreases their value for phylogenetic development. In fact, de Vries's views are called a "fanciful structure of airy hypotheses."

In Chapter X, hybridization, sexuality, etc., are discussed; and then in Chapter XI there is a return to the question: Are the facts sufficient to justify the theory of descent, and if so, what is the scientific value of this? It is answered, that the theory gives a picture of the relations of organisms to each other. But the phyletic process demands a starting-material with primitive organic properties. The original cells must, too, have been both many and yet dissimilar; they must have lived exclusively on inorganic material, and they were asexual. Progression from these was possible only through internal impulses (and not through external, as Darwin would say), *i. e.*, through the "Dominants"; by these alone could a purposefulness and an adaptation-ability be guaranteed from the start. The conclusion is reached, that, after all, extraordinarily little is known of the how and why of phyletic development.

Chapter XII, on the "Origin of Life," is admittedly speculative. Three hypotheses are considered: (1) That life on the earth is eternal,

but this is rejected ; (2) that life is eternal in the universe, but has been brought to the earth ; but, if this were the case, it should be occurring now and yet is not, so this is not accepted. (3) The view therefore seems necessary that life has had a beginning on the earth, not repeatedly, but only once, and yet under the influence of organizing "forces" which were not chemical or physical in nature, and which gave the possibility of reproduction, development, and inheritance. To my mind, this account is hardly easier to understand than the first two ; it may be consistent with the theory of "Dominants," if these be granted, but in that case the real problem is simply transferred to them. Indeed, it reveals both the artificial and the superficial nature of such an hypothesis, and suggests the return to that which is the simpler and more workable scheme, namely, that so-called vital properties are, some of them, the additive, others, the non-additive or "synthetic creative" result, of the energies which coexist here and nowhere else to form that system which is called the organism.

As might be expected, however, Reinke does not accept such an "Urzeugung," as he calls it ; for he finds that it meets with the general difficulty that it demands the formation, previous to the organism, of certain substances which are the products only of the organism. Accordingly, he acknowledges the belief in a creation of living things by some kind of an intelligence, perhaps cosmic in nature ; yet (p. 195) he would retain the complete validity of natural laws and a thorough-going causal nexus. The question must then be asked : Is not one of these, either the intelligence or the laws, superfluous ? For scientific purposes I believe that only one is necessary ; but our author, in order to make his two-fold system work, argues that, for example, human intelligence can "construct" things and yet natural laws remain intact in their operation. The evident reply to this is : Is not human intelligence, on the basis of such an *incomplete* analysis of the problem as that given here, to be necessarily regarded as following the natural law and, therefore, as an epiphenomenon ? I think that it is. But this view is seen to be conditioned wholly by stopping with and using such an insufficient analysis as a basis for conclusions ; and it leads to the conviction that, for the consistent and satisfactory solution of such problems, a more penetrating and genuinely metaphysical method than this must be employed. In just this respect, then, the author has failed to improve an opportunity for giving a real philosophy of botany and of biology, instead of which he has given the poetry of "Dominants," etc. His contribution is, then, while interesting and of some value in parts, only mediocre and philosophically incomplete.

E. G. SPAULDING.

PRINCETON UNIVERSITY.